Li Zheng

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EDUCATION

- B.S. (Information Science), University of Science and Technology of China, 1991;
- M.S. (Environmental Studies), Bemidji State University, Minnesota, 1993;
  Thesis *"Kinetics Modeling of Cometabolic Biodegradation of Trichloroethylene (TCE) by Mixed Methanotrophic Culture From Contaminated Groundwater"*
  Advisor: Dr. F. H. Chang
- Ph.D. (Water Resources Engineering), University of Notre Dame, 1998;
  Dissertation *"Statistical Characterization of the Transmissivity Distribution Using Hydraulic Head Measurements"*
  Advisor: Dr. S. E. Silliman

EMPLOYMENT

- Visiting Scientist, Mathematical Modeling and Numerical Analysis group, Los Alamos National Lab, NM, USA, April 2006 – present;
- Senior Scientist, Regional Water Resources Research Group Leader, Center for Agricultural Resources Research Center, Chinese Academy of Sciences, August 2002 – present;
- Adjunct Graduate Faculty, Department of Geological Sciences, University of Alabama, August 2004 – present;
- Part-time Project Scientist, Daniel B. Stephens & Associates, Inc., Albuquerque, NM, USA, Dec 2001 – May 2004;
- Assistant Scientist (faculty equivalent, permanent position), Geohydrology Section, Kansas Geological Survey, University of Kansas, January 1999- April 2002;
- Postdoc Researcher, Department of Civil Engineering and Geological Sciences, University of Notre Dame, Aug.1998 - Dec. 1998;
- Research Assistant, Department of Civil Engineering and Geological Sciences, University of Notre Dame, Aug. 1994 – July 1998;
- Research Assistant, Department of Civil Engineering, University of Minnesota, Twin Cities, Aug. 1993 – July 1994;
- Research Assistant, Center of Environmental Studies, Bemidji State University, MN, Nov. 1991 – Aug. 1993.

PROFESSIONAL SERVICES

- Referee for *Water Resources Research*, *Journal of Hydrology*, *Journal of Contaminant Hydrology*, *Computer and Geosciences*, *Hydrogeology Journal*, *Natural Resources Research*, and *Geological Society of American Proceeding*; book reviewer for *Computer and Geosciences*.
- Board member of PACE Institute (an environmental think tank NGO) and Bei Fang Jin De (a social development NGO), 2005 - present;
- Member of the High Plains Aquifer Evaluation Committee, Kansas, 1999 – 2001.

PROJECTS AND GRANTS

- PI of the partner institute CARR & Coordinator for partners in China region, "Twinning European and South Asian River basins to enhance capacity and implement adaptive integrated water resources management approaches (BRAHMATWINN)", funded by the European Commission, FP6-2005-Global-4, 2006-2008.
- PI of the partner institute CARR, "An integrated curriculum for basin scale water resources management", funded by the European Commission, Asia-Link program, 2005 – 2007.
- PI, "Ground water dynamics under exploitation and sustainable management of ground water resources in North China Plain: a case study of Shijiazhuang Region", Chinese Academy of Sciences, 2003 -2006.
- PI, "Characterization of mountain front and agriculture plain recharge processes in Fu Tuo River Basin "(Chinese Academy of Sciences 100 Talents Award), Chinese Academy of Sciences, 2002 -2005.
- Co-Investigator, "Study of Impacts of Shallow Groundwater Dynamics on the Hydro-ecological Environment in the Irrigation Districts of Yellow River Basin: The Case of Hetao Irrigation District, Inner Mongolia, China", Chinese National Science Foundation, 2002-2004.
- Co-PI, "A new method for identification of preferential flow paths at sites of groundwater contamination"; National Science Foundation, award number 9903103, August 1999 – August 2002.
- Co-PI, "A field assessment of direct-push technology for site characterization investigations"; USGS and Kansas Water Resources Research Institute, March, 2000 – March, 2002.
- Team Member, "The High Plains aquifer evaluation project"; Kansas Water Office, 2000-2001.
- PI, "Moving mesh modeling of groundwater flow and transport with sharp fronts", KGS Internal support (collaborate with Dr. Huang, Math Dept., supported by Huang's NSF grant), 1999 – 2001.

TEACHING AND SUPERVISING EXPERIENCES

- Supervising nine Master students (2003 – present) and two Ph. D. student (2005 – present) at Chinese Academy of Sciences;
- Co-supervising Jie Liu, Ph. D. student, University of Alabama, 2003 – present;
- Supervised two post doctoral research associates X. Zhan and M. Schumeister (shared with J. Butler) and one graduate student H. Yau, University of Kansas, 2000 – 2002;
- Co-supervise two REU students B. Hagerup and J. Chan, Summer 1997, and J. Przysyez, Spring 1997, University of Notre Dame;

- Taught Groundwater Hydrology Field Laboratory (CE444L, Spring 1996); Lectured parts of Groundwater Hydrology (CE 444, Spring 1996) and Advance Groundwater (CE439/539, Fall 1995), University of Notre Dame.

HONORS AND AWARDS

- 100 Talents Award, 2002 – 2005, Chinese Academy of Sciences;
- Fitzpatrick Fellowship, 1994-1997, Dept. of Civil Engineering and Geological Science, University of Notre Dame;
- Zahm Research Travel Grant, 1997, Graduate School, University of Notre Dame;
- Sommerfeld Fellowship, 1993-1994, Dept. of Civil and Mineral Engineering, University of Minnesota, MPLS;
- People's Scholarship, 1989-1991, University of Science & Technology of China.

PEER REVIEWED PUBLICATIONS

In Preparation and Under Review

1. Zheng, L. and C. Zheng, "The use and abuse of water resources in North China Plain: history, hydrology, and sustainable development", in preparation as an issue paper for *Ground Water*, 2006.
2. Zheng, L., J. Guo, K. J. He, and Y. P. Lei, "Characterization of vertical recharge in a deep vadose zone of North China Plain Aquifers", in preparation for *Vadose Zone Journal*, 2006.
3. Zheng, L. and M. Schulmeister, "High resolution lithologic characterization of unconsolidated deposits in deep vadose zone using direct push electrical conductivity profiling", in preparation for *Vadose Zone Journal*, 2006.
4. Zheng, L., S. M. Han, Y. P. Lei, and Y. Q. Zhang, "Calculating reference evapotranspiration and crop coefficients for regional water resources management", in preparation for *Agriculture Water Management*, 2006.
5. Jie, L., C. Zheng, L. Zheng, and Y. P. Lei, "Analysis of a groundwater flow system in North China Plain: implications for sustainable groundwater management", in preparation for *Journal of the American Water Resources Association*, 2006.
6. Wu, J. F. and L. Zheng, "Optimizing ground water development strategies by genetic algorithm: a case study for balancing the needs for agricultural irrigation and environmental protection in Northern China", 1st revision for *Hydrogeology Journal*, manuscript number: HJ-2005-0207, 2006.

Accepted and Published

7. He, K. J., L. Zheng, S. B. Dong, and L. Q. Tang, "PGO: a parallel computing platform for global optimization based on Genetic Algorithm", accepted for *Computers and Geosciences*, CAGEO-S-06-30, 2006.
8. Luo Y., Z. D. Lei, L. Zheng, S. X. Yang, Z. Ouyang, and Q. J. Zhao, "A Conceptual-Stochastic Model of Soil Water Regime in Crop Root Zone", accepted for *Journal of Hydrology*, HYDROL4743, 2006.

9. Luo, Y., M. Sophocleous, Z. Ouyang, L. Zheng, Y. Zhang, G. He, and S. Perkins, “Two-way coupling of unsaturated-saturated flow by integrating the SWAT and Modflow models”, accepted for the Proceeding of MODFLOW and MORE 2006, Golden, Colorado, May 2006.
10. He, K., S. Dong, L. Zheng, and L. Tang, "Service-Oriented Grid Computation for Large-Scale Parameter Estimation in Complex Environmental Modeling", accepted for the Proceeding of 21th Annual ACM Symposium on Applied Computing (SAC 2006), Dijon, France, April 2006.
11. Zhang, L., Y. P. Lei, L. Zheng, Y. Q. Fu, and M. K. Schulmeister, “ The direct push profiling of electronic conductivity for the lithology mapping in deep vadose zone”, accepted in *the Bulletin of Soil Sciences* (**in Chinese**), Oct. 2005.
12. Huang, T., Y. P. Lei, and L. Zheng, “Modeling of the spatial variation of mountain front recharges in Shijiazhuang Region”, accepted in the *Water Resources Assessment* (**in Chinese**), Nov. 2005.
13. Guo, J. Q., L. Zheng, Y. P. Lei, and S. P. Han, “An improved straight line method for pumping test data analyses near an impermeable boundary”, in press for the *Journal of Engineering Survey* (**in Chinese**), Jan. 2006.
14. Fu, Y. Q., Y. P. Lei, L. Zheng, and L. Zhang, “ The characteristics of Nitrate distribution in the deep vadose zone of crop field”, in press for *Research of Agriculture in Arid Area* (**in Chinese**), Jan. 2006.
15. Shu, Y. Q., S. Y. Chen, Y. P. Lei, and L. Zheng, “An analysis of the water consumption and ground water table changes in Beijing-Tianjin corridor”, in press for *Agricultural Ecology of China* (**in Chinese**), Feb. 2006.
16. Wu, J., C. Zheng, C. Chien, and L. Zheng, “A comparative study of Monte Carlo simple genetic algorithm and noisy genetic algorithm for cost effective sampling network design under uncertainty”, in press for *Advance in Water Resources*, 2006.
17. Tsou, M. S., S. Perkins, X. Zhan, D. Whittemore, and L. Zheng, “Inverse approaches with lithologic information for a regional groundwater system in southwest Kansas”, *Journal of Hydrology*, vol. 318, no. 1-4, p 292-300, 2006.
18. Zheng, L., J. Q. Guo, and Y. Lei, “A simple straight line method for analyzing pumping test recovery data”, *Ground Water*, vol. 43, no. 6, p 939-942, 2005.
19. Guo, J. Q and L. Zheng, “ An improved simulated annealing algorithm for estimating solute transport parameters from trace test data”, *Environmental Modeling and Software*, vol. 20, no. 6, p. 811-815 , 2005.
20. Han, S. M., L. Zheng, and Y. P. Lei, “A comparative study of semi-empirical methods for crop evapotranspiration (ET) in the mountain front plain of Taihan Mountain”, *Journal of Irrigation and Drainage* (**in Chinese**), vol. 24, no.1, p. 66-67, 2005.
21. Li, H. J., Y. P. Lei, L. Zheng, and R. Z. Mao, “The SEBAL model and the estimation of regional evapotranspiration”, *Remote Sensing Technology and Application* (**in Chinese**), Vol. 20, No. 3, 2005.
22. Zheng, L., Q. Zhang, Y. Lei, and H. Li, “Extracting vegetable field area from Landsat TM image for estimating vegetable water consumption: a case study in Luancheng County of Hebei Province, China”, Proc. SPIE Vol. 5884, p. 127-134, *Remote Sensing and Modeling of Ecosystems for Sustainability II*; edited by W. Gao and D. R. Shaw; 2005.
23. Lei, Y., Y. Shu, L. Zheng, and H. Li, “Estimating regional agricultural water use based on remote sensing data: a case study at Luancheng County of North China Plain”, Proc. SPIE Vol. 5884, p. 119-126, *Remote Sensing and Modeling of Ecosystems for Sustainability II*; edited by W. Gao and D. R. Shaw; 2005.

24. Li, H., Y. Lei, L. Zheng, and R. Mao, “Calculating regional drought indices using evapotranspiration (ET) distribution derived from Landsat7 ETM$^+$ data”, Proc. SPIE Vol. 5884, p. 407-415, *Remote Sensing and Modeling of Ecosystems for Sustainability II*; edited by W. Gao and D. R. Shaw; 2005.
25. Wu, S., R. Mao, and L. Zheng, “Spatiotemporal variability of winter wheat condition based on TM data and geostatistics”, Proc. SPIE Vol. 5884, p. 424-431, , *Remote Sensing and Modeling of Ecosystems for Sustainability II*; edited by W. Gao and D. R. Shaw; 2005.
26. Schulmeister, M., J. Butler, J. Healey, L. Zheng, D. Wysocki, and G. McCall, “Direct-push electrical conductivity logging for high resolution hydrostratigraphy characterization”, *Groundwater Monitoring and Remediation*, Vol. 23, No.3, p. 52-62, 2003.
27. Zheng, L. and S. Silliman, “Reply to Comments on Comparison of Observations from a Laboratory Model with Stochastic Theory: Initial Analysis of Hydraulic and Tracer Experiments”, *Transport in Porous Media*, Vol. 52, p. 117-118, 2003.
28. Bohling, G., X. Zhan, J. Butler, L. Zheng, "Steady-shape analysis of tomographic pumping tests for characterization of aquifer heterogeneities", *Water Resources Research*, Vol. 38, No. 12, p. 1324-1341, 2002.
29. Huang W., L. Zheng, and X. Zhan, “Adaptive moving mesh methods for simulating one-dimensional groundwater problems with sharp moving fronts”, *International Journal of Numerical Methods for Engineering*, Vol. 54, p.1579-1603, 2002.
30. Zheng, L., book review for “Geostatistics: Modeling Spatial Uncertainty”, by Chiles and Delfiner, Wiley, 1999, 695 pp., ISBN 0-471-08315-1, *Computers and Geosciences*, Vol. 27, p. 121-123, 2001.
31. Silliman, S. and L. Zheng, “Comparison of Observations from a Laboratory Model with Stochastic Theory: Initial Analysis of Hydraulic and Tracer Experiments,” *Transport in Porous Media*, Vol. 42, No. 1, p. 85-107, 2001.
32. Zheng, L. and S. E. Silliman, “Estimating the variance and integral scale of the transmissivity field using head residual increments,” *Water Resources Research*, Vol. 36 , No. 5 , p. 1353-1358, 2000.
33. Zheng, L. and S. E. Silliman, "Estimating the theoretical variogram from finite number of measurements", *Water Resources Research*, Vol. 36 , No. 1 , p. 361, 2000.
34. Silliman, S. E., L. Zheng, and P. M. Conwell, "The use of laboratory experiments for the study of conservative solute transport in heterogeneous porous media", *Hydrogeology Journal*, Vol. 6, No.1, p.166, 1998.
35. Conwell, P. M., S. E. Silliman, and L. Zheng, "Design of a network for estimation of the variogram of the hydraulic gradient: The role of the instrument", *Water Resources Research*, Vol. 33, No. 11, p. 2489, 1997.
36. Chang, F. H., L. Zheng, Z. Y. Gu, and D. Steen, "Bioremediation of Trichloroethylene in a Sanitary Landfill Site in Northern Minnesota, USA", proceeding of 1993 International Symposium on Subsurface Microbiology, UK, 19-24, September, 1993.

REPORTS

1. Huang W., L. Zheng, and X. Zhan, “Adaptive Moving Mesh Methods for Simulating Groundwater Problems with Sharp Moving Fronts”, Kansas Geological Survey Open-File Report 2000-70, 2000.
2. Zhan X., L. Zheng, and W. Huang, “Adaptive Moving Mesh Modeling of Two-dimensional Groundwater Flow and Transport”, Kansas Geological Survey Open-File Report 2000-76, 2000.

3. Butler, J.J., Jr., J.M.Healey, L. Zheng, W. McCall and M.K. Schulmeister, "Hydrostratigraphic characterization of unconsolidated alluvial deposits with direct-push sensor technology", Kansas Geological Survey Open-File Report 99-40, 30 p., 1999
4. Zheng, L. "Uncertainties and variabilities in assessing the aquifer depletion rate from water level measurements", in High Plain Aquifer Evaluation: Report of Progress and Products, FY 1999, compiled by R. Buddemeier and D. Whittemore, Kansas Geological Survey Open-File Report 99-21, June 1999.

INVITED TALKS AND SEMINARS

1. Zheng, C., L. Zheng and J. Liu, "Use and abuse of ground water resources in North China Plain: history, hydrology, and sustainable management", keynote talk in MODFLOW and MORE 2006 Conference, Golden, Colorado, May 2006.
2. Zheng, L., "Irrigated agriculture and sustainable management of water resources in North China Plain", International symposium on *Earth, Environment, and Human Impacts*, IPACES 2004 Annual Meeting and Workshops, Chengdu, China, June, 2004.
3. Zheng L., "Kansas Water Issues and Integrated Groundwater Research", Nanjing University, China, Sept. 2002.
4. Zheng L., "Kansas Water Issues and Integrated Groundwater Research", ShiJiaZhuang Institute of Agriculture Modernization, China, Oct. 2001.
5. Zheng, L., "Aquifer Heterogeneity: Characterization and Modeling", Institute of Geographical Sciences and Natural Resources, Beijing, China, September 2001.
6. Zheng, L., "Characterizing Aquifer Heterogeneity from Hydraulic Head Responses", Center for Computational Sciences and Information Technology, Florida State University, September 2000.
7. Zheng, L., "Modeling and experiment of water flow and microbial transport in a random porous Media", Kansas Geological Survey, University of Kansas, September 1998.
8. Zheng, L., "Characterization of the Transmissivity Distribution Using Hydraulic Head Measurements", Geoanalysis Group, Division of Earth and Environmental Sciences, Los Alamos National Laboratory, August 1997.

CONFERENCE PRESENTATIONS AND ABSTRACTS

1. Liu, J., C. Zheng, L. Zheng, J. Wu, and Y. Lei, "Sustainable Management of Groundwater Resources: A Case Study from the North China Plain", American Geophysical Union Annual meeting, San Francisco, USA, Dec. 2005.
2. Zheng, L., C. Zheng, and J. Liu, "The use and abuse of ground water resources in North China Plain: history, hydrogeology and sustainable management", Geological Society Association annual meeting, Salt Lake City, USA, Oct. 2005.
3. Liu, J., L. Zheng, Y. Lei, and C. Zheng, " Simulating groundwater dynamics in an irrigation dominated region of North China Plain for sustainable management", Geological Society Association annual meeting, Denver, USA, Nov. 2004.
4. Tsou, M. S., X. Y. Zhan, L. Zheng, L. Frees, C. Volkman, C. Tang, and J. Chen, "Sediment-yield Estimation in Cheney Watershed Using AnnAGNPS GIS Modeling System", International Workshop on Vulnerability of Water Resources to Environmental Changes, Beijing, Sept., 2002.

5. Butler, J.J., Jr., Healey, J.M., Schulmeister, M.K., and Zheng, L., “A field assessment of direct-push technology for site characterization investigations”, Proc. 18th Annual Water and the Future of Kansas Conf, 2001.
6. Butler, J., Franseen, E. , Jianghai X., Schulmeister, M., Zheng , L, Weis, T, Bynes, A, Healey, J., and Miller, R. “Experimental assessment of the utility of direct-push profiling and ground-penetrating radar for hydrostratigraphic investigations”, Soc. Econ. Pet. Min/Int. Assc. Sed., Prog. and Absts., p. 26, 2000.
7. Schulmeister, M.K , L. Zheng, J.J. Butler, J.M. Healey, G.W. McCall and D. Wysocki, “Detailed hydrostratigraphic characterization with direct-push electrical conductivity (EC) profiling”, AGU Eos, Suppl., v. 81, no. 19, p. S238., 2000.
8. Zheng, L., X. Zhan, and W. Huang, “Adaptive Moving Mesh Approach to Groundwater Flow and Transport Modeling”, Eos, Tansactions, American Geophysical Union, Vol. 81, No. 19, Suppl., page 250, 2000.
9. Schulmeister, M., L. Zheng, J. Butler J. Healey, W. McCall, and D. Wysocki, “Detailed Hydrostratigraphic Characterization with Direct-Push Electrical Conductivity (EC) Profiling”, Eos, Tansactions, American Geophysical Union, Vol. 81, No. 19, Suppl., page 238, 2000.
10. X. Zhan, G. Bohling, L. Zheng, and J. Butler, Jr., “Detailed Site Characterization with Hydraulic Tomography: A Numerical Investigation”, Eos, Tansactions, American Geophysical Union, Vol. 81, No. 19, Suppl., page 212, 2000.
11. Zhan X., L. Zheng, and W. Huang, “Adaptive Moving Mesh Modeling of Two-dimensional Groundwater Flow and Transport”, Eos, Tansactions, American Geophysical Union, Vol. 81, No. 48, Suppl., page 456, 2000.
12. J. Butler, E. Franseen, J. Xia, M. Schulmeister, L. Zheng, T. Weiss, A. Byrnes, J. Healey, R. Miller, “Experimental Assessments of the Utility of Direct-push Profiling and Ground-penetrating Radar for Hydrostratigraphic Investigations”, SEPM/IAS Research Conference – Hydrology of Sedimentary Aquifer, Santa Fe, NM, Sept. 2000.
13. Bohling, G., X. Zhan, J. Butler, and L. Zheng, “Data Inversion in Hydraulic Tomography: the Steady-Shape Approach”, Eos, Tansactions, American Geophysical Union, Vol. 81, No. 48, Suppl., page 433, 2000.
14. Zheng, L., S. Silliman, R. Dunlap, and M. Fletcher, "Microbial Transport to a Well in Multiple Realizations of a Heterogeneous Medium", Eos, Tansactions, American Geophysical Union, Vol. 80, No. 46, Suppl., page 104,1999.
15. Zheng, L. and R. Buddemeier, “Water table changes in the Kansas High Plains aquifer: spatial and temporal trends and variability , 1999 Midwest Ground Water Conference, St. Paul, MN.
16. Butler, Jr., J. , J.M. Healey, L. Zheng, W. McCall, and M. K. Schulmeister, “Hydrostratigraphic Characterization of Unconsolidated Alluvium with Direct-Push Sensor Technology”, 1999 Annual meeting of Geological Society of America, Denver, CO.
17. Zheng, L., “Calculating the experimental variogram: the three different formulae” (abstract), Eos, Tansactions, American Geophysical Union, Vol. 80, No. 17, Suppl., page 133, 1999.
18. Zheng, L. and S. E. Silliman, " Estimation of the Variance and Integral Scale of the Transmissivity Field: Fitting Semivariogram Based on Hydraulic Head Measurements" (abstract), Eos, Tansactions, American Geophysical Union, Vol. 79, No. 45, Suppl., page 267, 1998.

19. Silliman, S. E. and L. Zheng, "Comparison of First-Order Stochastic Theory with Results from a Controlled Lab Experiment", (abstract), Eos, Tansactions, American Geophysical Union, Vol. 79, No. 45, Suppl., page 315, 1998.
20. Zheng, L. and S. E. Silliman, "Sampling schemes for estimating the variogram in a stationary random field", (abstract), Eos, Tansactions, American Geophysical Union, Vol. 78, No. 46, Suppl., page 238, 1997.
21. Conwell, P., and, S. E. Silliman, and L. Zheng, "Two lab methods for estimating directional variograms of pore water velocities", (abstract), Eos, Tansactions, American Geophysical Union, Vol. 78, No. 46, Suppl., page 236, 1997.
22. Chan, J. T-P., B. Hagerup, L. Zheng, and S. E. Silliman, "Delineation of the capture zone and the impact of a limited aquifer knowledge" (abstract), Eos, Tansactions, American Geophysical Union, Vol. 78, No. 46, Suppl., page 225, 1997.
23. Silliman, S., L. Zheng, and C. McKelvey, “Laboratory measurement of the temporal variation in the spatial moments of a tracer plume: instrumentation and analysis” (abstract), Eos, Tansactions, American Geophysical Union, Vol. 78, No. 46, Suppl., page 274, 1997.
24. L. Zheng, S. E. Silliman, and G. Arevlo, “Estimation of the Integral Scale of the Hydraulic Transmissivity from Depth to Water Measurements” (abstract), Eos, Tansactions, American Geophysical Union, Vol. 77, No. 46, Suppl., page 220, 1996.
25. Silliman, S. E. and L. Zheng, "Local Dispersion Length Scales for Design of Laboratory Dispersion Experiments" (abstract), Eos, Tansactions, AGU, Vol. 77, No. 46, Suppl., page 245, 1996.
26. Conwell, P., L. Zheng, and S. E. Silliman, "Effect of Instrument on Network Design for Estimation of Gradient Semivariogram" (abstract), Eos, Tansactions, AGU, Vol. 77, No. 46, Suppl., page 206, 1996.
27. Zheng, L. and F. H. Chang, "Kinetic Modeling of Cometabolic degradation of Trichloroethylene (TCE) by Methanotrophs", General Meeting of the American Society for Microbiology, Atlanta, GA, 1993.